

REMARKS

Claims 1, 4, 5, 7-9, and 13-16 are pending. All pending claims are under examination.

Support

Support for the amendments to claim 1 relating to the locus of the center of the sweet spot can be found in the specification as filed on page 1 beginning at line 21.

Support for the amendments to claim 1 relating to the locus of the center of gravity can be found in the specification as filed on page 1 beginning at line 23.

The Claims

Claim 1 is the only independent claim. All other claims are now directly dependent only on claim 1. As explained more fully below claim 1 is patentable. All other claims are patentable because claim 1 is patentable, all other claims being narrower than claim 1. The only ground of rejection is for obviousness under 35 USC 103. There are no other grounds of rejection.

The rejection in paragraph 1 on page 2 of the last Office Action of claim 1, and certain other claims, as obvious over US

patent 5,346,217 (Tsuchiya) is traversed. As presently amended claim 1 reads as follows with paragraph designations added to aid discussion.

- 1. A golf club head comprising
 - [A] a face for hitting a golf ball,
 - [B] a crown,
 - [C] a sole,
 - [D] a sidewall extending from the periphery of the sole towards the crown excluding the face, and
 - [E] a neck to be fixed to a shaft,
 - [F] and formed by welding together
 - [G] a face member for forming the face,
 - [H] a crown member for forming the crown and
 - [I] a walled sole member for forming said sole, sidewall and neck, wherein
 - [J] the walled sole member is made of a metal material by monoblock casting,
 - [K] the walled sole member has a variable thickness, wherein the ratio (t_2/t_1) of the minimum thickness t_1 and the maximum thickness t_2 thereof is in the range of from 1.2 to 3.0,
 - [L] the face member is made of a different metal material than the walled sole member by plastic deformation processing,
 - [M] the face member is thicker than the crown member such that the thickness of the face member is not less than 2.0 mm, but the thickness of the crown member is not more than 1.2 mm whereby
 - [N] the depth of the center of gravity of the head is not less than 36.0 mm, and the sweet spot height is not more than 28.0 mm.--

The Claimed Thickness Ratio Is Not Obvious

The attention of the Examiner is invited to the thickness ratio of paragraph [K] of claim 1. In support of the obviousness rejection as to this ratio, the Examiner argues: "Tsuchiya

discloses the sole thickness ranging from 1 to 3 mm (Col. 4, lines 50-51)" [Last Office Action page 3 line 2].

The full relevant portion of the cited reference reads as follows:

The thickness t1 of the face 10a is in a range from 2 to 3.5 mm, the thickness t2 of the crown 10b is in a range from 0.6 to 3 mm and the thickness t3 of the sole 10c is in a range from 1 to 3 mm. Further, the club head main body 10 is constructed so that the height (the distance between the crown and sole side ends of the face) is 40 mm or larger, the width (the distance between the toe and heel side ends of the face) is 70 mm or larger and the entire volume of the club head is 190 cc or larger. [Tsuchiya, Col. 4, Lines 48-56]

As clearly seen above Tsuchiya teaches that his t1 can be "from 2 to 3.5 mm". Based on the above teaching, the skilled artisan would naturally conclude that Tsuchiya's t1 can be 3 mm, a figure within the disclosed range.

As further clearly seen above Tsuchiya teaches that his t2 can be "in a range from 0.6 to 3 mm". Based on this teaching, the skilled artisan would naturally conclude that Tsuchiya's t2 can be 3 mm. To do otherwise would be to disregard the clear teaching of Tsuchiya.

Tsuchiya never refers to any "ratio" neither in the above cited passage nor anywhere else in the reference. Silence is not a teaching. Ratios are unimportant to Tsuchiya. Were they important they would have been disclosed.

It is, of course possible to divine a ratio. Such a divined ratio, consistent with the teachings of Tsuchiya, would be $t1 = 3$ and $t2 = 3$, yielding a $t2/t1$ ratio of $3/3$ or 1.0 . Paragraph [K] of pending claim 1 defines a $t2/t1$ ratio "in the range of from 1.2 to 3.0 ". A teaching of a ratio " 1 " is not a teaching within the claimed range which starts at " 1.2 ". The Examiner has provided no argument as to why the skilled artisan would (a) consider thickness ratios when none are disclosed or (b) manufacture a golf club head having a ratio within the scope of that claimed when clearly ratios outside those claimed are disclosed by the reference.

The $t1$ and $t2$ of Tsuchiya are not the claimed $t1$ and $t2$. The $t1$ and $t2$ of the reference are disclosed in Tsuchiya Figure 5. The $t1$ of Tsuchiya is a measurement of the thickness of the face. Regarding his $t1$ and $t2$, Tsuchiya states:

"In major cases of production, a club head has a face of 8 mm thickness ($t1$), a crown of 3 mm thickness ($t2$). . ."
[Col. 2, Line 7].

The claimed $t1$ is a thickness of the sole member. The claimed sole member is not the "face" of the Tsuchiya head. The claimed $t2$ is a thickness of the crown. The claimed sole member is not the "crown" of the Tsuchiya head.

Paragraph [K] states that "the walled sole member has a variable thickness" Tsuchiya does not teach a variable thickness for his sole plate. which he calls a "sole" Tsuchiya states:

In major cases of production, a club head has . . . a sole of 10 mm thickness (t3) including a sole plate . . . [Col. 2, Line 7].

The phrase "a thickness" teaches a single thickness and is not a teaching of the claimed "variable thickness" in any ratio and certainly not within the claimed ratio.

The Claimed Use of Different Materials is Not Obvious

Paragraph [L] of claim 1 requires that "the face member is made of a different metal material than the walled sole member". This is not taught by Tsuchiya who teaches the same alloy four times and claims it once. Tsuchiya states:

In a further preferred embodiment of the present invention, at least a part of the shell of the club head main body is made of Ti alloy of a composition which contains 3 to 6% by weight of Al, 2 to 4% by weight of V, 1 to 3% by weight of Mo, 1 to 3% by weight of Fe and Ti in balance.

In a further preferred embodiment of the present invention, at least a part of a club head shell is made of Ti alloy containing 3 to 6% by weight of Al, 2 to 4% by weight of V, 1 to 3% by weight of Mo, 1 to 3% by weight of Fe and Ti in balance. . . " [Tsuchiya Col. 4, Lines 3-13]

A quick reading of the above two paragraphs might lead the casual observer to the improper conclusion that the reference

discloses two different alloys. It does not. It twice discloses generically a single alloy. The amounts of Al, V, Mo, Fe, and Ti in the first paragraph quoted above are identical to those quoted in the second paragraph. This is the disclosure of a single generic alloy not a disclosure of a head wherein "the face member is made of a different metal material than the walled sole member" as defined by paragraph [K] of pending claim 1.

This same double disclosure of the same single generic alloy is repeated by Tsuchiya in two additional paragraphs beginning at column 6, line 58.

When Tsuchiya describes his head, he uses a single alloy within the scope of the above generically described alloy. Tsuchiya states:

These pieces 21 to 23 are made of the Ti alloy specified above. One example of such a Ti alloy contains 4.7% by weight of Al, 2.9% by weight of V, 2.0% by weight of Mo, 2.1% by weight of Fe and Ti and impurities in balance. The material Ti alloy is first molten by, for example, vacuum arc re-solution process to form a cast block which is then subjected to hot and cold rolling to form a thin plate. [Tsuchiya Col. 8, Lines 7-14]

The pieces 21, 22, and 23 referred to by Tsuchiya are identified in Tsuchiya Figure 7 as the entire head 10 referred to by Tsuchiya as the "club head main body 10" [Tsuchiya Col. 4, Line

43]. Tsuchiya teaches making his head 10 of a single alloy not of different materials as claimed.

The Claimed Center of Gravity and Sweet Spot Are Not Obvious

As presently amended in newly added paragraph [N] claim 1 requires that the depth of the center of gravity of the head, identified by "L" in Figure 2, be not less than 36.0 mm, and the sweet spot height, identified by "H" in Figure 2, be not more than 28.0 mm. It is respectfully submitted that these two limitations and their relationship are not disclosed in the cited prior art in a combination that would render them obvious in pending claim 1 together with the other limitations present in claim 1.

Claim 7 is Not Obvious

The rejection of Claim 7 in paragraph 2 on page 3 of the last Office Action is traversed. Claim 7 is dependent on claim 1 and is not obvious because claim 1 is not obvious as explained above.

The Rejection of Claims 14 and 15 Is Moot

The rejection of claims 14 and 15 in paragraph 3 on page 4 of the last Office Action is traversed but has been rendered moot because these claims have been canceled.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact David R. Murphy (Reg. No. 22,751) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Pursuant to the provisions of 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants hereby petition for an extension of three (3) months to February 24, 2005 in which to file a reply to the Office Action. The required fee of \$1,020.00 is enclosed herewith.


Application No.: 09/897,141

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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